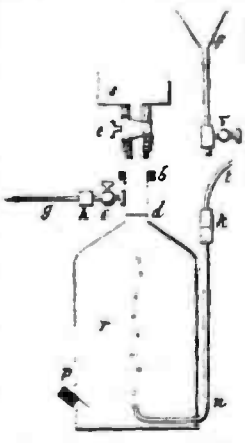
AN IMPROVED GAS-HOLDER, AND OXYHYDROGEN BLOW-PIPE.

THE following economical apparatus, answering the double purpose of a gas-holder and an oxyhydrogen blow-pipe, has been successfully used, for some time, by the writer of this paper. In the annexed cut, *r* represents the gas receiver; *s*, a shelf which screws on at *b*; *e* and *c* stop-cocks, as in the ordinary gas-holder; *hg*, a jet filled with wire-gauze at the thick part; *h*; *p*, an aperture for receiving the beak of a retort; *nk*, a bent pipe passing into the interior of the receiver, *r*; *kt*, a flexible tube, which screws on at *k*, and forms a connection with a bladder containing the mixed gases; *f*, a funnel with a tube and stop-cock for screwing on at *k*. The tubular portion, *db*, is about ¾ inch internal diameter, and 2 inches in length. When the apparatus is to be used as an oxy-hydrogen blow-pipe, water is introduced into the receiver, so as to stand at the level, *d*; the orifice at *b* is closed by means of a cork, and the bladder containing the mixed gases is screwed on at *k*; the safety-jet *h g* is screwed on the stop-cock *e*: upon pressure being applied to the bladder, the mixed gases rise through the water, and filling the space *d b*, pass out in a strong stream through the jet *g*, and are there ignited. This arrangement is perfectly safe, for in the event of the flame passing along the safety-tube *h*, we can only have an explosion of the gases contained in *d b*, the only effect of which would be to blow out the cork in the orifice *b*, as the large body of water in *r* most effectually cuts off all communication with the gases in the bladder. When the apparatus is to be used as a gas-holder, the shelf, *s*, is screwed on at *b*, the funnel, *f*, at *k*, and gases are received and transmitted in the same manner as in the ordinary gas-holder.



T. TATE.

WORKSOP TOWN HALL, CORN EXCHANGE, AND ASSEMBLY ROOM.

THIS building, now in progress, is situate in Potter-street, at the corner of Bridge-street. A wing on the right of the building will form the entrance to the sack-market, shambles, and general market, the entrance to which will be through a circular gateway 10 feet wide. The approach from the street to the level of the corn exchange will be by eight steps. Entering the corridor, on the right, will be a retiring-room, 20 feet by 14 feet, with dressing-rooms. On the left of a corridor will be a lobby. These are all on the same level with the corn exchange. From this corridor, through the vestibule, will be the entrance to the corn exchange, opposite to the centre archway. The exchange will be 58 feet long by 29 feet wide, and 19 feet high from the level of the floor to the floor of the assembly-room, which is over it, and of the same size. The exchange will be lighted by five windows on the east side, and four on the west. The ascent to the upper rooms will be by the principal staircase, which consists of thirty-one steps, up to the landing of the assembly-room. From the landing of the principal staircase, we pass on through a lobby to the vestibule and corridor, with a retiring-room attached. The assembly-room will be a large room, capable of holding 1,000 people standing, or about half that number conveniently seated. It will be lighted by five windows on each side, and there will be three fire-places, one on each side and one at the south end. The roof will form a segment of a circle. The assembly-room will be 20 feet 6 inches high in the centre. The orchestra, which will be at the entrance end, will be 21 feet 6 inches in extent, having four tiers of seats: the width of the orchestra will be 12 feet 6 inches. Beyond the assembly-room will be the magistrates' retiring and refreshment-room: it will be lighted by two Venetian windows, one at each end. The ceiling of this room, as well as those of the corridor, vestibule, lobby, and ante-room, will consist of sunk panels and enriched cornices. Passing through the corn exchange we find the sack market: it will be 33 feet 6 inches in length, by 17 feet wide; beyond which, to the south, will be the butchers' shambles, which will comprise ten shops, five on each side, with a space between of 12 feet. This building will be octagonal, and will have a projecting roof, 13 feet 6 inches, for the convenience of the fruit, butter, vegetables, poultry, and earthenware market; and at the two extreme angles will be the fish market. Mr. Gilbert, of Nottingham, is the architect, Mr. Ferguson, the contractor, and the works are under the superintendence of Mr. Mallinson. The style of the elevation is Venetian. The ornamental terminations of the two archways (one on either side of the building) seem very unmeaning.

FOUL AIR IN WELLS.

I beg leave to communicate the following simple method of extracting carbonic acid gas from wells, which plan will, I believe, be found sufficient in all such cases as that alluded to by your "Seven Years' Subscriber:"—Attach a gutta-percha or other pipe, reaching to the bottom of the well, to the valve of a common pair of blacksmith's bellows and blow away—or, in other words, pump it out.

* *

As you invite suggestions for remedying this fruitful cause of the loss of many lives, I beg to offer a few remarks in addition to your own judicious observations. Your "Seven Years' Subscriber" says slacked lime was used as well as water. If the slacked lime was used dry, and the water separately, the wonder ceases that the bodies could not be extricated until the following day.

The lime should have been made into cream of lime, the more diluted the better, and thrown down in small quantities at a time, continuously, until a candle would burn.

A watering-pot is the best implement to use, as it secures minute dispersion, and the lime acts upon a larger area.

Chloride of lime, in the proportion of one pound of the dry powder to five gallons of water, well mixed, and used in the same manner, acts much more efficaciously than quick lime; and if there be any admixture of sulphuretted, carburetted, or any other combination of hydrogen, it secures the instant decomposition at the same time that the lime absorbs the carbonic acid gas.

I write from experience in destroying the inflammable gas and choke damp in coal-pits, and as the chloride of lime or common bleaching powder, is cheap, and to be bought at any chemists, I hope some of your numerous subscribers will test it for themselves and report the results, which I have no doubt will confirm what I have stated.

P. B. P.

ANOTHER BRIDGE OVER THE NIAGARA FALLS.—We understand that the Niagara Suspension-bridge Company intend to erect, next season, a suspension foot-bridge across the Niagara river, between their present bridge and the Falls. The new bridge will be considerably longer, of course, than the present one, and the transit upon it will be one of the most agreeable adventures of visitors to the great cataract. The company will apply for a charter at the ensuing session of the Legislature.—*Rochester Advertiser.*

THE BRIDGEWATER-HOUSE GALLERY.—We hear with much gratification that the picture gallery in Bridgewater-house is to be completed forthwith, so that the collection may be opened to the public and foreign visitors during the Great Exhibition. As the scaffolding is only now being put up to begin the internal works, efforts will be needed to get done. We hope other owners of collections and fine mansions will take the hint thus afforded, and set their houses in order. England has wonderful collections of works of art, but too many of them are sealed.

SAFETY OF WINDSOR CASTLE.

SIR,—The "Dramatic Representations at Windsor Castle," by command of her Majesty, the preparations for which are confided to eminent members of the British stage, are again taking place. To this there seems only one objection, and that is, the total want of adaptation of any room or space within the Castle for such a representation, not even excepting (as stated) the Rubens' room.

Granting that the substructures of that room are capable of sustaining the additional pressure upon the walls and floors, the whole interior of the theatre must necessarily be formed of one mass of combustible materials, dependent for its light and heat (during the longest and perhaps coldest nights) entirely on artificial means: let but one spark of fire ignite, and such is the known construction of the building, that nothing in all human probability can possibly save the greater part of it from entire destruction—as was formerly the case at the Opera-house, the Pantheon, and most of the metropolitan theatres.

Let it *not* be understood that the exception is intended to be taken against the propriety of theatrical representations being provided for in a suitable building, and under proper restraint, during the residence of the Court at Windsor Castle: the object is, that the deficiency of a proper place may be supplied. It is to be hoped that the required structure may receive the immediate notice of the proper authorities, and thus provide against the possibility of a great national calamity.

WYKEHAM AND WYATVILLE.

WHY IS THE MARBLE ARCH AT CUMBERLAND-GATE.

THE "Marble Arch," which defaced so long the front of Buckingham Palace from ill-association with the building, being fairly floored, and lying piecemeal in an inclosure in the Green-park, the question, with great propriety, has been often asked, what to do with it. You are aware, Sir, that there is not a single important entrance-gate to Kensington-gardens, nor, properly speaking, an architectural object in these gardens, nor in Hyde-park; that which is pushed up in the corner, next to the Duke of Wellington's house, being, from its very situation, more an entrance into Piccadilly than belonging to the park, at which the many roads meet from various parts of the town and its environs, to enter that great thoroughfare of the metropolis. There is a fine broad vista, beautifully timbered on its either side, in Kensington-gardens, the further extremity of which is formed by the front façade of the Royal Palace, the other terminating at the brick "haw-haw" separating its gardens from Hyde-park, at the spot which constitutes the greatest altitude of the surrounding scene, and which termination is a void. Do not the very elevated nature of this point, and the other circumstances, indicate it to be an eminently appropriate site for the architectural structure in question, where, facing the front of the palace, and forming the central entrance to its grounds, it would admirably associate with use and with the beauty of the situation; and would require no further expense to the public purse, than the mere transit and readjustment of its several parts to their original places; as it would be perfect, for such a purpose, *per se*; and would constitute a prominent, commanding, and elegant object from all points of view: but, Sir, what do we hear?—that the road at Cumberland-gate has been turned from its usual line into Park-lane, where temporary gates have been placed; that the two excellent, light, iron gates, presented by Mr. Hope, and which were admirably adapted for the spot, and quite handsome enough for so awkward a nook, have been cast aside, and their site surrounded by an extensive hoarding, and that within it workmen are actually now employed preparing the ground for the foundation and subsequent erection of the Marble Arch—at this *other* poked-up corner of the park! Who could have suggested such an incongruity—such a blunder in the choice of situation? At this corner of the park, I should remark, Sir, as at the southern corner, there is situated a ducal residence — odd coincidence!—that the present director of the "Woods and Forests" is the eldest son of

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